CONTENTS OF VOLUME 13

NUMBER 1

Papers on Carbon Cycling in Mid-Latitudes

F. CARON and G. M. MILTON: Preface to Papers on Carbon Cycling in Mid-Latitudes 1

R. W. D. KILLEY, R. R. RAO and S. EYVINDSON: Radiocarbon speciation and distribution in an aquifer plume and groundwater discharge area, Chalk River, Ontario 3

W. G. EVENDEN, S. C. SHEPPARD and R. W. D. KILLEY: Carbon-14 and tritium in plants of a wetland containing contaminated groundwater 17

G. M. MILTON, K. J. KING, J. SUTTON and S. ENRIGHT: Tracer studies of carbon source utilization in a wetland on the Canadian Shield 23

P. VILKS, F. CARON and M. K. HAAS: Potential for the formation and migration of colloidal material from a near-surface waste disposal site 31

S. C. SHEPPARD, K. V. TICKNOR and W. G. EVENDEN: Sorption of inorganic ^{14}C on to calcite, montmorillonite and soil 43

G. I. VEINOTT and J. CORNETT: Carbon isotopic disequilibrium in the shell of the freshwater mussel *Elliptio complanata* 49

Regular papers

J. J. KOLAK, D. T. LONG, T. M. BEALS, S. J. EISENREICH and D. L. SWACKHAMER: Anthropogenic inventories and historical and present accumulation rates of copper in Great Lakes sediments 59

S. C. BROOKS and J. S. HERMAN: Rate and extent of cobalt sorption to representative aquifer minerals in the presence of a moderately strong organic ligand 77

S. NISHIZAWA, G. IGARASHI, Y. SANO, E. SHOTO, S. TASAKA and Y. SASAKI: Radon, Cl^- and SO_4^{2-} anomalies in hot spring water associated with the 1995 earthquake swarm off the east coast of the Izu Peninsula, central Japan 89

M. D. RUIZ CRUZ and E. REYES: Kaolinite and dickite formation during shale diagenesis: isotopic data 95

O. MÉNARD, T. ADVOCAT, J. P. AMBROSI and A. MICHARD: Behaviour of actinides (Th, U, Np and Pu) and rare earths (La, Ce and Nd) during aqueous leaching of a nuclear glass under geological disposal conditions 103

NUMBER 2

M. FUHRMANN, S. BAJT and M. A. A. SCHOONEN: Sorption of iodine on minerals investigated by X-ray absorption near edge structure (XANES) and ^{125}I tracer sorption experiments 127

S. BARNES and R. H. WORDEN: Understanding groundwater sources and movement using water chemistry and tracers in a low matrix permeability terrain: the Cretaceous (Chalk) Ulster White Limestone Formation, Northern Ireland 143

E. VALCKE, A. CREMERS and L. MOSKALTCHUK: The use of sapropels as amendments in radiocaesium and radiostrontium contaminated soils 155

D. K. MCCARTY, J. N. MOORE and W. A. MARCUS: Mineralogy and trace element association in an acid mine drainage iron oxide precipitate; comparison of selective extractions 165

Y. ZHANG and R. DAWE: The kinetics of calcite precipitation from a high salinity water 177

G. R. DAVIDSON, R. L. BASSETT, E. L. HARDIN and D. L. THOMPSON: Geochemical evidence of preferential flow of water through fractures in unsaturated tuff, Apache Leap, Arizona 185

M. I. DASSENAKIS, M. SCOULLOS, E. FOUFA, E. KRASAKOPOULOU, A. PAVLIDOU, M. KLOUKINIOTOU: Effects of multiple source pollution on a small Mediterranean river 197

M. A. HUERTA-DIAZ, A. TESSIER and R. CARIGNAN: Geochemistry of trace metals associated with reduced sulfer in freshwater sediments 213

D. M. YATES, K. J. JOYCE and P. J. HEANEY: Complexation of copper with polymeric silica in aqueous solution 235

Y. DAUPHIN, M. PICKFORD and B. SENUT: Diagenetic changes in the mineral and organic phases of fossil avian eggshells from Namibia 243

C. A. J. APPELO, E. VERWEIJ and H. SCHÄFER: A hydrogeochemical transport model for an oxidation experiment with pyrite/calcite/exchangers/organic/matter containing sand 257

A. N. ROYCHOUDHURY, E. VIOLLIER and P. VAN CAPPELLEN: A plug flow-through reactor for studying biogeochemical reactions in undisturbed aquatic sediments 269

G. H. BROWN: Book Review: The Periglacial Environment (Second Edition) 281

Erratum 283

NUMBER 3

Geochemical Investigations of the Baltic Sea and Surrounding Areas

P. SZEFER and G. P. GLASBY: Geochemical investigations of the Baltic Sea and surrounding areas 285

P. SZEFER: Distribution and behaviour of selected heavy metals and other elements in various components of the southern Baltic ecosystem 287

P. SZEFER G. P. GLASBY A. KUSAK K. SZEFER H. JANKOWSKA M. WOLOWICZ and A. A. ALI: Evaluation of the anthropogenic influx of metallic pollutants into Puck Bay, southern Baltic 293

P. SZEFER, G. P. GLASBY, H. KUNZENDORF, E. A. GÖRLICH, K. LATKA, K. IKUTA and A. A. ALI: The distribution of rare earth and other elements and the mineralogy of the iron oxyhydroxide phase in marine ferromanganese concretions from within Slupsk Furrow in the southern Baltic 305

R. M. RENNER, G. P. GLASBY and P. SZEFER: Endmember analysis of heavy-metal pollution in surficial sediments from the Gulf of Gdansk and the southern Baltic Sea off Poland 313

B. GRACA and J. BOLALEK: Forms of phosphorus in sediments from the Gulf of Gdańsk 319

T. NEUMANN, T. LEIPE and G. SHIMMIELD: Heavy-metal enrichment in surficial sediments in the Oder River discharge area: source or sink for heavy metals? 329

M. KERSTEN, S. THOMSEN, W. PRIEBSCH and C.-D. GARBE-SCHÖNBERG: Scavenging and particle residence times determined from $^{234}Th/^{238}U$ disequilibria in the coastal waters of Mecklenburg Bay 339

K.-C. EMEIS, T. NEUMANN, R. ENDLER, U. STRUCK, H. KUNZENDORF and C. CHRISTIANSEN: Geochemical records of sediments in the Eastern Gotland Basin—products of sediment dynamics in a not-so-stagnant anoxic basin? 349

L. BRÜGMANN, R. HALLBERG, C. LARSSON and A. LÖFFLER: Trace metal speciation in sea and pore water of the Gotland Deep, Baltic Sea, 1994 359

H. VALLIUS and O. LEHTO: The distribution of some heavy metals and arsenic in recent sediments from the eastern Gulf of Finland 369

D. STÜBEN, S. BRAUN, P. JEROSCHEWSKI and P. HAUSHAHN: Application of *in-situ* and on-line measurements to environmental studies in Lake Müritz, northern Germany 379

Regular Papers

G. KASHULINA, P. DE CARITAT, V. CHEKUSHIN, C. REIMANN, M.-L. RAISANEN and I. V. BOGATYREV: Acidity status and mobility of Al in podzols near SO_2 emission sources on the Kola Peninsula, NW Russia 391

J. YOSHINAGA, M. YONEDA, M. MORITA and T. SUZUKI: Lead in prehistoric, historic and contemporary Japanese: stable isotopic study by ICP mass spectrometry 403

NUMBER 4

R. T. DHOUM and G. J. EVANS: Evaluation of uranium and arsenic retention by soil from a low level radioactive waste management site using sequential extraction 415

I. YUSTA, F. VELASCO and J.-M. HERRERO: Anomaly threshold estimation and data normalization using EDA statistics: application to lithogeochemical exploration in Lower Cretaceous Zn–Pb carbonate-hosted deposits, Northern Spain 421

Y. SANO, Y. NISHIO, T. GAMO, A. JAMBON and B. MARTY: Noble gas and carbon isotopes in Mariana Trough basalt glasses 441

C. ZHANG, L. WANG, S. ZHANG and X. LI: Geochemistry of rare earth elements in the mainstream of the Yangtze River, China 451

S. C. ARMSTRONG, N. C. STURCHIO and M. J. HENDRY: Strontium isotopic evidence on the chemical evolution of pore waters in the Milk River Aquifer, Alberta, Canada 463

M. KÜHN, J.-F. VERNOUX, T. KELLNER, M. ISENBECK-SCHRÖTER and H. D. SCHULZ: Onsite experimental simulation of brine injection into a clastic reservoir as applied to geothermal exploitation in Germany 477

D. C. KEITH, W. J. HARRISON, R. F. WENDLANDT and E. J. DANIELS: Mineralogical responses of siliciclastic carbonate-cemented reservoirs to steamflood enhanced oil recovery 491

C. S. KIRBY, J. A. ELDER BRADY: Field determination of Fe^{2+} oxidation rates in acid mine drainage using a continuously-stirred tank reactor 509

A. H. WELCH and M. S. LICO: Factors controlling As and U in shallow ground water, southern Carson Desert, Nevada 521

S. BOTTRELL: Book review: Stable Isotope Geochemistry (4th Edition) 541

NUMBER 5

G. CHIODINI, R. CIONI, M. GUIDI, B. RACO and L. MARINI: Soil CO_2 flux measurements in volcanic and geothermal areas 543

E. ROSENTHAL, B. F. JONES and G. WEINBERGER: The chemical evolution of Kurnub Group paleowater in the Sinai-Negev province—a mass balance approach 553

S. A. CARROLL, M. ALAI and C. J. BRUTON: Experimental investigation of cement, Topopah Spring tuff, and water interactions at 200°C 571

H. J. WINKELS, S. B. KROONENBERG, M. Y. LYCHAGIN, G. MARIN, G. V. RUSAKOV and N. S. KASIMOV: Geochronology of priority pollutants in sedimentation zones of the Volga and Danube delta in comparison with the Rhine delta 581

W. KLOPPMANN, L. DEVER and W. M. EDMUNDS: Residence time of Chalk groundwaters in the Paris Basin and the North German Basin: a geochemical approach 593

M. ÅSTRÖM: Partitioning of transition metals in oxidised and reduced zones of sulphide-bearing fine-grained sediments 607

A. BAUER, B. VELDE and G. BERGER: Kaolinite transformation in high molar KOH solutions 619

G. CAPASSO and S. INGUAGGIATO: A simple method for the determination of dissolved gases in natural waters. An application to thermal waters from Vulcano Island. 631

P. STOFFYN-EGLI, D. E. BUCKLEY and J. A. C. CLYBURNE: Corrosion of brass in a marine environment: mineral products and their relationship to variable oxidation and reduction conditions 643

Erratum: M. LODEMANN, P. FRITZ, M. WOLF, M. IVANOVICH, B. T. HANSEN and E. NOLTE: On the origin of saline fluids in the KTB (Continental Deep Drilling Project of Germany) 651

NUMBER 6

L. AQUILINA, J.-C. BAUBRON, D. DEFOIX, P. DÉGRANGES, J.-R. DISNAR, B. MARTY and M.-C. ROBÉ: Characterization of gases in sedimentary formations through monitoring during drilling and core leaching (Balazuc borehole, Deep Geology of France Programme 673

D. W. BLOWES, L. LORTIE, W. D. GOULD, J. L. JAMBOR and C. J. HANTON-FONG: Geochemical, mineralogical and microbiological characterization of a sulphide-bearing carbonate-rich gold-mine tailings impoundment, Joutel, Québec 687

S. OUCHANI, J.-C. DRAN and J. CHAUMONT: Exfoliation and diffusion following helium ion implantation in fluorapatite: implications for radiochronology and radioactive waste disposal 707

C. POINSSOT, P. TOULHOAT and B. GOFFÉ: Chemical interaction between a simulated nuclear waste glass and different backfill materials under a thermal gradient 715

A. P. BARKER, R. J. NEWTON, S. H. BOTTRELL and J. H. TELLAM: Processes affecting groundwater chemistry in a zone of saline intrusion into an urban sandstone aquifer 735

T. ALLARD and J.-P. MULLER: Kaolinite as an *in situ* dosimeter for past radionuclide migration at the Earth's surface 751

H. PAUWELS, W. KLOPPMANN, J.-C. FOUCHER, A. MARTELAT and V. FRITSCHE: Field tracer test for denitrification in a pyrite-bearing schist aquifer 767

M. PAGAN, W. J. COOPER and J. A. JOENS: Kinetic studies of the homogeneous abiotic reactions of several chlorinated aliphatic compounds in aqueous solution 779

G. SCHETTLER and R. L. ROMER: Anthropogenic influences on Pb/Al and lead isotope signature in annually layered Holocene Maar lake sediments 787

R. FUGE: Book Review: Regional Geochemistry of north-east England 799

Announcement 801

NUMBER 7

E. KOROBOVA, A. ERMAKOV and V. LINNIK: ^{137}Cs and ^{90}Sr mobility in soils and transfer in soil–plant systems in the Novozybkov district affected by the Chernobyl accident 803

W. G. DARLING: Hydrothermal hydrocarbon gases: 1, Genesis and geothermometry 815

W. G. DARLING: Hydrothermal hydrocarbon gases: 2, Application in the East African Rift System .. 825

M. A. ARMIENTA, A. L. MARTIN-DEL-POZZO, R. ESPINASA, O. CRUZ, N. CENICEROS, A. AGUAYO and M. A. BUTRON: Geochemistry of ash leachates during the 1994–1996 activity of Popocatépetl volcano 841

S. A. STOUT and P. D. LUNDEGARD: Intrinsic biodegradation of diesel fuel in an interval of separate phase hydrocarbons 851

P. E. VAN MIDDLESWORTH and S. A. WOOD: The aqueous geochemistry of the rare earth elements and yttrium. Part 7. REE, Th and U contents in thermal springs associated with the Idaho batholith... 861

M. LABONNE, D. BEN OTHMAN and J.-M. LUCK: Recent and past anthropogenic impact on a Mediterranean lagoon: Lead isotope constraints from mussel shells 885

B. E. NOWOSIELSKI and J. B. FEIN: Experimental study of octanol–water partition coefficients for 2,4,6-trichlorophenol and pentachlorophenol: Derivation of an empirical model of chlorophenol partitioning behaviour 893

A. BAUER and G. BERGER: Kaolinite and smectite dissolution rate in high molar KOH solutions at 35° and 80°C 905

D. A. C. MANNING: Book Review: Reactive transport in porous media 917

J. GRATTAN: Book Review: Monitoring and Mitigation of Volcanic Hazards 918

R. RAISWELL: Book Review: Principles and Applications of Geochemistry (Second Edition)..... 919

NUMBER 8

I. N. SOLODOV, A. V. ZOTOV, A. D. KHOTEEV, A. P. MUKHAMET-GALEEV, B. R. TAGIROV and J. A. APPS: Geochemistry of natural and contaminated subsurface waters in fissured bed rocks of the Lake Karachai area, Southern Urals, Russia 921

P. NÉGREL and S. ROY: Chemistry of rainwater in the Massif Central (France): a strontium isotope and major element study 941

M. STILLER, A. NISSENBAUM, R. S. KAUFMANN and A. LONG: Cl-37 in the Dead Sea system—preliminary results 953

D. BARON and C. D. PALMER: Solubility of $KFe(CrO_4)_2 \cdot 2H_2O$ at 4–75°C 961

P. MÖLLER, P. DULSKI, H. GERSTENBERGER, G. MORTEANI and A. FUGANTI: Rare earth elements, yttrium and H, O, C, Sr, Nd and Pb isotope studies in mineral waters and corresponding rocks from NW-Bohemia, Czech Republic 975

L. N. PLUMMER, E. BUSENBERG, J. B. MCCONNELL, S. DRENKARD, P. SCHLOSSER and R. L. MICHEL : Flow of river water into a Karstic limestone aquifer. 1. Tracing the young fraction in groundwater mixtures in the Upper Floridan aquifer near Valdosta, Georgia 995

L. N. PLUMMER, E. BUSENBERG, S. DRENKARD, P. SCHLOSSER, B. EKWURZEL, R. WEPPERNIG, J. B. MCCONNELL and R. L. MICHEL: Flow of river water into a karstic limestone aquifer—2. Dating the young fraction in groundwater mixtures in the Upper Floridan aquifer near Valdosta, Georgia 1017

U. SIEWERS: Obituary: Valentine Konstantinovich Lukashev (25.06.1938–08.06.1998) 1045